Surveying the surveyors

Swen C. Renner

**All Creatures: Naturalists, Collectors,
and Biodiversity, 1850–1950**

by Robert E. Kohler

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You might wonder how the history of biological field surveys could fill a whole book; however, these endeavours—and the biologists behind them—provide fascinating reading.

In *All Creatures: Naturalists, Collectors, and Biodiversity, 1850–1950*, Robert E. Kohler describes just what ‘creatures’ were involved. A certain type of person—typically middle-aged men in comparatively well-paid positions with lots of vacation time—formed a loosely organized, national volunteer group to survey nature. Kohler describes who these surveyors were, where they came from and why this guild of workers emerged in North American society. He also details their knowledge, experiences and the skills they needed to perform successful surveys. Importantly, Kohler distinguishes between explorers—collectors who hunted for curiosities to exhibit—and surveyors—naturalists who collected and numbered species in the pursuit of natural history and science.

Kohler focuses on North American surveyors and their collections, and makes the point that these individuals only could

have emerged from the ‘inner frontiers’ of the USA—those rural areas with limited access, where nature is relatively untouched or has been reclaimed from human use. In the words of Kohler, volunteer and recreational surveyors were encouraged initially by their desire to do something while on vacation, for example to sample the inner frontiers; it was only at the turn of the twentieth century that the work gradually changed from amateur to professional. This theory, although hard to prove, is plausible; pioneers with the time and money to collect voluntarily are essential to the evolution of naturalists. After they set this baseline, professionalism could take over the collecting business.

To perform effective field surveys, surveyors needed the skills and knowledge of how and where to find particular species, as well as a general overview of the region they were surveying. For example, they had to be adept at carpentry, hunting, riding, organizing field trips, walking in unsafe terrain and, above all, knowing where a trap should be set to catch a particular animal; it is astonishing how little has changed. In addition to ecological fieldwork, I regularly carry out surveys in Southeast Asia to collect birds and mammals. The work *per se*—the necessary skills, background knowledge and experience, and the knack for finding a particular species—are much the same now as they were centuries ago. Even hunting and carpentry might still be helpful; however, additional experience and skills are now required. Planning, sampling design and post-sampling methods are evolving rapidly to present data in an up-to-date way, for example molecular analysis, geographic information systems and statistics.

Kohler makes many other interesting points: personally, I am reluctant to do laboratory work, and sometimes I do not see advantages of molecular approaches—although I use them if necessary. Hence, I agree wholeheartedly with Kohler that “lab work is boring” and that there are no—or hardly any—social interactions

between laboratory workers. Even if the latter is disputable, I agree that there is, and always was, a difference between laboratory work and fieldwork. When scientists limit themselves to laboratory work, they miss a plethora of information that can only be learned from fieldwork, and vice versa.

Last but not least, Kohler postulates a new kind of post-1950 surveying: sampling existing collections for ancient DNA, a task not performed until very recently. These surveys are increasingly important in molecular systematics, for example in analysing bird phylogenetics by using ancient DNA. From my own experience with bird collections, however, I believe that there are still too few samples of some species and regions for such endeavours to be effective. I postulate that surveys in the wild are still indispensable and will yield data not yet stored anywhere else, but found exclusively in nature.

Although *All Creatures* is comprehensive, I wonder why Kohler merely covered the period from 1850 to 1950, as surveys are still common today—albeit to a lesser extent in North America. In addition, why focus on only part of one continent when there are so many other interesting examples from around the world? British, French and German explorers and surveyors have done incredible work, many of the results of which are stored in North American collections.

Notwithstanding these minor points, *All Creatures* presents an excellent summary of the work and lives of explorers and surveyors. Kohler summarizes the rapidly vanishing field of biological surveys for a broad audience, formidably bringing back old times to explain the birth and growth of surveys, collecting and natural history.

**Swen C. Renner is at the Conservation
& Research Center, National Zoological Park,
Smithsonian Institution, Front Royal,
Virginia, USA.**

E-mail: renners@si.edu

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